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TECHNOLOGY DEPARTMENT

AUGUST 20, 1949

# SCIENCE NEWS LETTER

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THE WEEKLY SUMMARY OF CURRENT SCIENCE



**Waterlily**

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## ASTRONOMY

# Pressure Harms Science

**Soviets' interference with science involves loss to them and to us because through international cooperation we could make a combined attack on problems.**

► **ATTACKING** "the present pressure of politics on science in Russia," a leading American scientist said that the Russians, and to some extent the West, are "the losers."

Dr. Harlow Shapley, director of the Harvard College Observatory in Cambridge, Mass., and a former president of the American Association for the Advancement of Science, said that the recently reported interference of the Soviet state with astronomy is nothing new. Dr. Shapley, who is a leading proponent of cooperation with scientists in all parts of the world including the Soviet Union, commented to Science Service on the reports from Russia before his departure for Paris, where he has been invited to participate in a conference on United Nations research laboratories.

Before 1935, a Russian astronomer was "strongly censured by the government for an article he wrote emphasizing that celestial mechanics and related subjects could not be taught according to the tenets of dialectic materialism."

The astronomer, who had previously been on the staff of the Harvard Observatory, was Dr. Boris Gerasimovic. He was later exonerated when someone in the Communist party came to the same conclusions about the teaching of astronomy.

By 1935, when Dr. Shapley recalls talking to him in Paris, the Soviets had elevated Dr. Gerasimovic to the top position in Russian astronomy, director of the Pulkovo Observatory.

"He foretold at that time that there was to be conflict between science and political theory, and that there might be scientific victims, but he believed it was all in a great social cause, and he seemed willing to acquiesce, in hopes of the great future."

"Two years later," adds Dr. Shapley, "he was liquidated along with six or eight other leading Russian astronomers for reasons that are still obscure."

"This purge of 1937-38 has naturally antagonized western astronomers against the Russian system," the American astronomer points out.

"Since the war, we have desperately attempted to maintain cordial relations because the science is naturally international and supranational, and cordiality is a good policy anyway."

Recent attacks by the Soviet on western astronomy are "as yet relatively trivial compared with the operations in the field of genetics," he suggests. This may be because "the science of astronomy touches social relations even less than music or physics."

Some of the reports of the Russian at-

tack on astronomy may be exaggerated, he feels, but they are not the whole trouble.

"Science cannot flourish under the domination of a social system," he declares. "It must be free and not warped to fit an irrelevant plan."

"To the extent that they are prostituting their sciences in this direction, the Russians will be the losers; but we shall lose some also, because they are excellent scientists and they, with us, could help so much in the great scientific attacks on the ignorance, diseases, and the poverty of man."

Dr. Shapley compares the Soviet political pressure on science with the religious pressure on science in this country at the time of famous Scopes trial—the famed Dayton, Tenn., evolution or "monkey" trial in the summer of 1925—and more especially Hitler's distortion of anthropology.

"Whether it is the anti-evolution statutes in some of the American states, or Nazi attacks on the 'Jewish' relativity theory, or the Kremlin's telling the astronomers what cosmogony is good for them and what is bad, the outcome is bad, the spirit demoralization is dangerous."

He believes that nine-tenths of the Russian scientists "are aware of the social mistake, as were many of those who lived under Hitler, and many of the biological teachers in Tennessee, Mississippi and Arkansas."

"The Soviet version of the moment is the worst, because the affliction is nationwide. I wish I had some assurance the malady were transitory."

"There are symptoms in our own Congress," he charged.

"If the political control of free thought, of science, of music, arts and general culture should spread, we have dark ages ahead of us."

"Therefore, we cannot condone the Soviet infringement. Perhaps in some way we can help them discover the error and ultimate futility of their policy," concludes Dr. Shapley.

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## ASTRONOMY

## Soviet Political Attitude Seen as Blow to Science

► **"POLITICAL** dictation in scientific theory" may be a blow to one of Russia's major sources of strength, her science, Dr. Lyman Spitzer, Jr., Princeton University astronomer, has suggested.

Commenting on reports of attacks on

western astronomers and astronomical theories by the Soviets, Dr. Spitzer declared that if the attacks are continued and expanded, "the future of astronomical research in the Soviet Union will be dim indeed."

"At present," he said, "Soviet astronomy enjoys a very high reputation in other countries."

But pure science cannot exist if ideological and political considerations are permitted to determine theories about nature, he warned.

"A deliberate policy of political dictation in scientific theory could bring only dubious and short-term advantages to the Soviet Union, and would, in the long run, seriously impair the scientific eminence that is now a major source of strength to the U. S. S. R.," Dr. Spitzer concluded.

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## CHEMISTRY

## "Soapless Soaps" Used in New Cream-Testing Method

► **TWO** of the new "soapless soaps", or synthetic detergents, are used in a new method of testing milk for its butterfat content that is quicker and simpler than the long-standard Babcock test. This new method is described in detail in the journal, *SCIENCE* (July 29) by its originator, Dr. Philip Schain of the laboratory staff of the Staten Island Veterans Hospital.

Chemists know the two detergents as polyoxyethylene sorbitan monolaurate and dioctyl sodium phosphate. Solutions of the two are added successively, together with a dye that stains fats red, to make the readings easier. The effect of the detergents is to break up the thin protein films that surround the butterfat droplets in the milk. The fat then coalesces into a continuous mass, easily measurable in the special vessels used.

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## ENGINEERING

## New TV Glass Gives Better Day and Night Pictures

► **BETTER** television pictures are promised by the Pittsburgh Plate Glass Company with a new, especially developed screen face for use on metal picture tubes. The new glass is said to give sharp black and white contrast pictures both in daylight and in artificially lighted rooms.

The glass was developed primarily to meet the needs of the television industry, and is already in use by one major company. Its trade name is Teleglas. It produces a sharp picture directly on the tube face itself. It is claimed that it eliminates the need for costly filtering devices which were formerly placed in front of the tube in attempts to enhance contrast. It also eliminates dazzling brightness as well as faded grays from the picture face itself.

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## MEDICINE

# Hormones Against Cancer

**Relief to breast cancer patients in the inoperable stage of the disease is being given by sex hormones, promising new weapon against the condition.**

► BREAST cancer patients who are beyond the aid of surgery now are obtaining relief from a new medical weapon, sex hormones.

Evidence of the relief-giving ability of the hormones was obtained in a study made of 105 women patients by Drs. F. E. Adair, R. C. Mellors, J. H. Farrow, H. Q. Woodard, G. C. Escher, and J. A. Urban of New York. They report their study in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (Aug 13).

Synthetic male sex hormone was given to 70 of these patients by injections into the muscles three times a week for one month or longer. Of 58 patients suffering with pain, 44 obtained temporary relief. Improvement was also noted in appetite; there was a feeling of well-being and relief of labored breathing.

Patients who had previously been unable either to work or to care for themselves could hold jobs and carry on a certain amount of normal physical activity after treatment. This improvement came after treatments of from two to 11 months and lasted for four months or longer in half of the patients.

Thirty-five patients over 40 years of age received the synthetic female sex hormone. Pain was relieved in 11 of 18 patients in this group. There was also the same improvement in appetite, breathing and sense of well-being as in the patients treated with male hormones.

The improvement appeared over periods of from two to 17 months and lasted seven months or longer in about half of the patients.

There was no evidence that the cancer was made more active by the male hormone, but, in one patient treated with female hormones, there was a greater rate of growth in the skin cancer which had spread from its original site in the breast.

Extreme reactions to the male hormone were noted in some patients. These included swelling of the legs, deepened voice, increase in the growth of hair, and acne. Only side reactions to the female hormone were nausea and vaginal bleeding.

Since this study began, 55 patients have died, the research team reported.

The Breast Clinic of the Memorial Hospital and the Sloan-Kettering Institute for Cancer Research were the site of the experiments. The work was aided by grants from the National Cancer Institute of the U. S. Public Health Service, the American Cancer Society, the Albert and Mary Lasker Foundation, the Adele R. Levy Fund and the Stranahan Foundation.

Sex hormones are designated as a third weapon now available to fight breast cancer by a committee of experts in a progress report to the Council on Pharmacy and Chemistry of the American Medical Association which is also published in the association's JOURNAL.

## MEDICINE

## New Anti-TB Drug

► FIRST animal trials with a new antibiotic having tuberculosis-fighting qualities revealed that it can arrest the activity of TB germs.

The antibiotic is lupulon, derived from hops, a necessary ingredient in brewing beer. Its anti-TB action in mice is reported by Drs. Yin-Ch'ang Chin and Hamilton H. Anderson of the University of California Medical School in San Francisco, and Drs. Gordon Alderton and J. C. Lewis of the Western Regional Research Laboratory in Albany, Calif., in the PROCEEDINGS OF THE SOCIETY FOR EXPERIMENTAL

A direct attack on breast cancer and the widespread lesions resulting from it can now be made with the hormones where previously no weapon for treatment had existed, the committee stated.

But they emphasize that surgery and X-rays are still the best treatments, and hormones should be used only as a last resort, when the other methods have failed or cannot be applied.

This research is still in its early stage, the reports point out. More knowledge must first be accumulated of the hormones' action and its end results. This is expected to come from the experience of researchers working with the new weapon all over the country.

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## BIOLOGY AND MEDICINE (Jan.).

One hundred mice infected with TB were used in the tests. Some got the lupulon by mouth, others had it injected into the muscles, while 40 were untreated and observed for comparison.

The result in the lupulon-treated mice was a four to one reduction in the severity of the disease in body tissues and organs. However, kidney damage was noted in the mice receiving the drug by the muscle route. Whether the antibiotic can reverse the symptoms of the disease has not been determined yet.

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**ENEMY AIRCRAFT INTERCEPTOR**—This Convair Lark, officially designated XSAM-N-4, is a shipboard-launched guided missile designed to intercept and destroy enemy aircraft before ship or shore target can be attacked. The missile is powered by a high thrust, liquid fuel rocket motor and was built for the Navy's Bureau of Aeronautics by Consolidated Vultee Aircraft Corporation.



## GENERAL SCIENCE

# Foundation Bill Stymied

➤ SCIENTISTS who are hoping that Congress—after four years—will finally pass a bill to set up a national science foundation have a new kind of problem. It's how to get a bill out of the Rules Committee of the House of Representatives.

The scientists include many of the nation's best-known men of science. They are experts at charting the paths of the tiny particles that make up an atom or probing the bits of stuff inside the cells of the human body or studying the faint specks of light that left distant stars billions of years ago. Leaders in nearly all major fields of science have told congressional committees for four years that they want to see the foundation created. Newest legislation to bring this about has been in the House Rules committee's lap for nearly two months without any action having been taken.

The Senate passed a science foundation bill in March, but the House Committee on Interstate and Foreign Commerce rearranged the measure and did not report it out until June 13. Since then, it has been in the Rules Committee. With many congressmen talking about adjournment, supporters fear that the foundation may die in the House for the third time in four years.

A new move to get action on the bill has just been taken. Rep. Robert Crosser, D., Ohio, chairman of the Commerce Committee, has introduced a resolution to bring the foundation bill to the floor of the House.

But here, again, scientists supporting the measure may be disappointed.

Under the parliamentary rules of the House, which it seems can approach some scientific rules in complexity, the resolution is referred to the Rules committee. If the committee does not act on either the science foundation bill or the resolution, Rep.

Crosser can call for a vote on his resolution, but not before Sept. 12 at the earliest. This type of resolution can be called up only on the second or fourth Monday of a month, and only after three weeks have elapsed following its introduction.

Thus, the science foundation's fate at this session of Congress appears to hinge to some extent on how long the law-makers are in session.

The foundation would be a new government agency, charged with administering government support of science. Four times in as many years, the Senate has approved it, but President Truman vetoed one bill and two others failed in the House. The present bill in the House, as well as the Senate version, will probably be approved, when and if it reaches the White House.

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## On This Week's Cover

➤ SERENE, cool, immaculate, the waterlily floats beneath the summer sun. The delight of poets of all ages and peoples, this lovely flower has infected botanists, too, with poesy: its learned Latin name, *Nymphaea*, needs no explanation. The real home of the waterlilies is in the tropics; here they develop all sizes and colors, including delicate pinks, glowing reds and gorgeous blues. There are only a few kinds of waterlilies in the United States, but two of them at least are real beauties. The Western species, that grows in ponds far up the slopes of the Rocky Mountains, is a splendid yellow. The Eastern species, that floats on all waters from the Great Plains to the Atlantic seaboard, is shining white, and fragrant as well.

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From what can foot-and-mouth disease vaccine be made? p. 118.

## RADIO

Saturday, August 27, 3:15 p.m., EDT

"Adventures in Science" with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. Walter O. Walker, director of research of Ansul Chemical Company, Marinette, Wis., will discuss "Modern Fire Fighting."

Fluorine, the colorless and dangerous gas usually obtained from fluor spar, was never much used except for etching glass until the fabulous research project that resulted in the atomic bomb got under way.

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## ENTOMOLOGY

## Track "Hot" Mosquitoes

Radioactivity is absorbed more by female mosquitoes than by male, study shows. "Tagged" insects also revealed that the female survives longer.

► FEMALE mosquitoes become more radioactive than their male companions reared in the same solutions of radio-isotopes. And nearly two-fifths of the radioactivity of these females is to be found in their legs, with practically none in their wings. Furthermore, the female of the species is much tougher than the male, in terms of survival: male insects tracked by means of their radioactivity lived only a few days, whereas the longest-lived females survived four weeks.

These are among newly-discovered facts of life among African yellow-fever mosquitoes, turned up by Drs. John C. Bugher and Marjorie Taylor at the Yellow Fever Research Institute at Lagos, Nigeria. They present a preliminary report on their research in the journal, *SCIENCE* (Aug. 5).

Drs. Bugher and Taylor "tagged" large numbers of the yellow-fever mosquito, *Aedes aegypti*, by rearing them during the last stage of their larval development in photographic trays of water containing small amounts of the radioactive isotopes of phosphorus and strontium.

This work was done independently of a similar project carried out at the U. S. Army Chemical Center in Maryland, and reported recently by Drs. C. C. Hassett and D. W. Jenkins.

More than a quarter-million of these "hot" mosquitoes were released in field

tests at the Lagos laboratory. They were detected subsequently with Geiger counters when they alighted on volunteer human "bait" at various distances up to 3,800 feet—more than half a mile.

## GENETICS

## Lysenkoism Menaces U. S.

Spread of the anti-Mendelian genetics of Russia is believed by the editor of the *Journal of Heredity* to be a threat to us because of its appeal to some groups.

► THE anti-Mendelian genetics of Lysenko, now the official biological gospel in the USSR, have more of an appeal even in this country than many scientists appear to realize, warns Robert C. Cook, editor of the *JOURNAL OF HEREDITY* (July). Calling attention to the declared intention of the new masters of Soviet science to make their views prevail by any necessary means, he declares:

"Our ground-rules of tolerant give and take are not understood by those who explicitly deny any tolerance, who cynically accept naked and irresponsible force as the ultimate arbiter. To extend the usual human-canine amenities to a dog suffering

Direction and distance of mosquito flight is controlled more by the wind than by the insects themselves, Drs. Bugher and Taylor learned in the tests. Also, high winds and strong rains hamper mosquito activities and shorten the females' lives.

Very weak solutions of the radioactive salts sufficed to "tag" the mosquitoes. Stronger solutions were apt to harm the insects, first sign of such radiation injury being failure on the females' part to lay eggs. Microdissection of such non-reproductive females showed that their ovaries had failed to develop.

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from hydrophobia is obviously to invite disaster. To pretend that this fulminating madness can be placated is stupid. If the new doctrine according to Marx prospers, we will find it very difficult to arrange a divided peace with it."

The people most likely to accept Lysenko's revival of the Lamarckian doctrine of environment-induced changes in heredity are the moderately well-read group who nevertheless know little or nothing about science, Mr. Cook holds. They harbor suspicions that genetics "is tainted with racism and somehow represents most of the worst features of Presbyterian predestination." They are therefore prone to welcome any doctrine that promises to rid them of this dreaded though imaginary bogey.

Summing up in his long article the whole history of the dispute that raged in Soviet scientific circles for years until it was decided in Lysenko's favor by political decree in 1948, the editor indicts the Russian leader as essentially ignorant of the very science over which he now wields power. He states that Lysenko has consistently avoided contacts with such Western scientists as have been in Russia, and that one English geneticist who did manage to get an interview with him reported afterwards that it was "like trying to talk about integral calculus with a person who didn't know his twelve-times table."

Lysenko, the editor believes, is not a mere cynical opportunist, deliberately uttering nonsense and untruth for personal profit. More probably he is a sincere fanatic, ruthless in making others swallow what he has already swallowed. But that makes him all the more to be feared; he did not hesitate to ruin the career of his early friend and sponsor, Academician Nicolai Vavilov, now presumed dead.

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**WORLD'S FASTEST AIRLINER**—This is Britain's four-engined all-jet airliner, the de Havilland "Comet." It is a low-wing monoplane with a moderate swept-back wing and is expected to have a cruising speed of 500 miles per hour at 40,000 feet. The small jet in the foreground was used to determine wing resistance, stress and strain for the new airliner.



## PSYCHOLOGY

# Picking Workers by Tests

➤ A LOT of accepted ideas about tests to select workers for various occupations have been exploded in a study by Dr. Edwin E. Ghiselli, professor of psychology at the University of California.

For one thing, the result of a single test is seldom sufficient evidence for predicting whether an individual is suited for a particular kind of job. Whole batteries of tests will have to be developed if reasonable accuracy is to be achieved in personnel selection.

Dr. Ghiselli bases this conclusion on an evaluation of test scores for various occupations as compared with actual proficiency. The validity of the tests was only "moderate or low."

The psychologist also questioned the idea that intelligence tests are more effective in the "higher" than in the "lower" occupations. For example, the tests show up better in picking skilled workers than in picking salesmen.

He also found that there were wide

variations in the effectiveness of a given type of test within a single type of occupation. Intelligence tests, for example, varied over a wide range for business machine operators, in an occupation in which requirements would be expected to be rather uniform.

Psychologists have generally believed that a test has a certain degree of validity for a particular job and that variations from it are minor in nature. Dr. Ghiselli says just the reverse seems to be true: it is actually unusual when there is agreement in validity.

The psychologist studied results of testing in seven categories of occupations: clerical, sales, supervisory, protective service, skilled, semiskilled and unskilled. He obtained his data from psychological and technical reports from industry and governmental agencies. His results are published in a monograph by the University of California Press.

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## CHEMISTRY

# Algae for Food Explored

➤ FOOD-producing possibilities of a lower plant that can treble its bulk in 24 hours if supplied with constant illumination are being technically explored at the Stanford Research Institute, Palo Alto, Calif., Dr. J. E. Hobson, director of the Institute stated. Dr. Hobson spoke as guest of Watson Davis, director of Science Service, on the Adventures in Science program, sent out over stations of the Columbia Broadcasting System.

The plant is the one-celled alga known to botanists as *Chlorella*. It is familiar as the cause of much of the green scum that forms on cattle ponds and other bodies of still water in warm weather.

First hint of the possibilities of this humble plant was obtained by Drs. H. A. Spoehr and Harold W. Milner of the Carnegie Institution of Washington, and Dr. Jack Myers of the University of Texas. They discovered that by controlling its chemical environment they could at will cause it to produce a very high yield of either protein or fat.

The Stanford Research Institute, financed by Research Corporation, was asked to probe into the economic potentialities of *Chlorella*. One of the first things they discovered was that it could be made to grow very much more rapidly by giving it 100 times as much carbon dioxide as occurs naturally in the air. This extra supply is readily obtainable from the waste gases from brewery vats or from the combustion gases escaping up factory chimneys.

The Institute has also undertaken a study of the fat or oil piled up in *Chlorella*'s tiny body when its nitrogen supply is kept short. This may prove useful in soapmaking or similar industries, thereby releasing animal or vegetable fats and oils now used there for other purposes. It is even possible that *Chlorella* oil may prove a good drying oil, which is always in demand by paint and varnish makers.

*Chlorella* protein, which accumulates when the plant is given an abundant supply of fixed nitrogen, is most likely to get into the human food cycle by way of livestock or poultry feed, being converted into milk, meat and eggs. There is the possibility, however, Dr. Hobson stated, that this protein may be processed into a form palatable enough for direct human consumption.

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## VETERINARY MEDICINE

# Cattle Stomach Lining Good For Foot-Mouth Vaccine

➤ FOOT-AND-MOUTH disease vaccine for the protection of livestock can be prepared more easily and cheaply than heretofore by culturing the virus on the lining of the rumen, or first stomach, of cattle. This new method of production has been developed by Drs. H. S. Frenkel and H. H. J. Frederiks at the National Veterinary Research Institute in Amsterdam.

Vaccines at present used in Mexico, South America and Europe are prepared from virus taken from the bodies of cattle infected with the disease. A recent step forward, still in the experimental stage, was the culturing of the virus on bee tongues fresh from the slaughter-house. Now the use of rumen tissue may replace that of tongue, especially since one rumen yields as much vaccine as four tongues.

Drs. Frenkel and Frederiks announce their results in a letter to the editor of the British scientific journal, *NATURE* (Aug. 6).

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## INVENTION

# New Auto Headlight Is Bright but Non-Glaring

➤ THE problem of getting a bright light on the road, yet not blinding other drivers with glare, is attacked in a new way by John T. Overstreet of San Antonio, Texas, who has just received U. S. patent 2,478,308 on his invention.

Just behind the front lens of his headlight Mr. Overstreet places a ring that supports a series of strips, slanted at an angle like the slats of a half-open Venetian blind, except that the strips are slightly down-curved rather than straight. Both sides of the strips are silvered.

Angles and curvature of the strips are so arranged that the greater part of the light received from the lamp, either directly or by reflection from the parabolic mirror, is thrown directly forward to place strong illumination on the road. A smaller proportion is thrown upward and sideways, to give a general, non-glaring lighting effect.

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## METEOROLOGY

# April Sunshine Was More Intense Than Summer Rays

➤ OLD SOL is not entirely to blame for the hot weather of the present summer. The most intense rays of the year were in April, according to a "solar radiation recorder" on top of a General Electric Laboratory building in Schenectady, N. Y.

This year's unusual heat was caused by unusual atmospheric pressure conditions, G. E. meteorologists state. These prevent the moving in of cold air masses from the north. The radiation recorder shows that the sun has not been sending an out-of-the-common quantity of heat into the area this year.

The solar radiation recorder was developed by G. E. engineers several years ago. The portion of it which is struck by the rays of the sun is a small, glass vacuum tube, inside of which is a metal strip called a thermocouple. Electrical characteristics of the strip vary with the amount of solar heat striking it.

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## PSYCHOLOGY

# Study Why Men Succeed

A new institute has been established to assess the personalities of candidates for highly skilled jobs. Emphasis will be on why people succeed.

►PSYCHOLOGISTS at the University of California are preparing a unique approach to the study of man: they will try to learn why men succeed instead of why they fail.

To carry out this task, an Institute of Personality Assessment and Research, funded by \$100,000 from the Rockefeller Foundation, has just been established on the Berkeley campus.

Head of the new institute is Dr. Donald W. MacKinnon, a key figure in the wartime personality assessment program of the Office of Strategic Services, which was famed for its methods of selecting men for specialized and hazardous overseas missions in World War II.

The new institute, of course, will not be concerned with picking spies and saboteurs, but rather with assessing the personalities of candidates for highly skilled occupations. Many of the O.S.S. techniques will be used.

Dr. MacKinnon points out that the attention of psychologists has been directed primarily at the sick and abnormal. Little attention has been devoted to learning why

other men, who may have been subjected to just as many psychological difficulties as the sick and abnormal, are able to succeed and even to capitalize on their psychological problems.

"We hope to discover the factors that produce adjustment, happiness and effective living rather than illness, unhappiness and maladjustment," Dr. MacKinnon said.

The studies will be made in an "assessment community," where the "selectees" live with staff psychologists for a three-day period. Conditions in the community will be as natural and free of artificiality as possible, and subjects will be put through intensive evaluative procedures. The latter will include standard psychological tests, and situational tests in which the selectees can be observed as they react to environmental, social or occupational situations. In addition there will be psychiatric and personal history interviews and observation of day to day behavior.

Dr. MacKinnon and his colleagues will assess candidates for medical school, engineering curricula, and for other highly

skilled occupations. Selectees will be followed through school and their performance for a number of years after graduation will be studied in order to obtain information which may be helpful in the future in selecting candidates for the various professions.

The staff of the institute will represent a variety of skills in psychology and social science.

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## ENTOMOLOGY

## Insects Fed Micro-Doses of Poison with Microsyringe

►DOSES of DDT as small as a microgram (one thirty-millionth of an ounce) or even smaller can be fed to individual insects by means of a microsyringe devised by Dr. A. W. Woodrow, U. S. Department of Agriculture entomologist. The device consists of an ordinary medical glass syringe, with a screw-thread drive added to push the plunger by minute amounts.

Dr. Woodrow invented his microsyringe primarily for use in studying the effects of minimal doses of DDT on worker bees. It can, however, be adapted for other similar uses.

The new gadget is described and pictured in the journal, SCIENCE (Aug. 5).

Science News Letter, August 20, 1949

## BIOCHEMISTRY

## Analytic Device Measures Minute Elements of Cells

►GENES, the elusive heredity-determining chemical units whose existence has been mathematically proven but not visually demonstrated, may be among the minute cell-nucleus structures that will be tracked down by a new micro-analysis apparatus developed in the cytology laboratories of Columbia University, under the direction of Prof. Arthur W. Pollister.

The apparatus, though complex in principle, has been so simplified that any fairly well trained laboratory worker can use it under the higher powers of an ordinary microscope, Prof. Pollister declared.

The device operates by measuring, with ultra-sensitive photo-electric tubes, the amounts of light absorbed by various chemical components of the cell nucleus. One important compound, nucleic acid, has been shown to exist in a single cell in an amount less than one-trillionth of an ounce. Similarly "fantastically small" quantities of other chemical compounds can likewise be measured.

Research centers for the use of the new apparatus are being set up at Brookhaven National Laboratory, the Doctors' Hospital in Cleveland and a number of universities in this country, as well as at Mysore and Bombay universities in India.

Science News Letter, August 20, 1949



**PROBING MAKE-UP OF CELLS**—"Fantastically small" parts of individual cells can be studied with this photometric apparatus shown being used by Prof. Arthur W. Pollister of Columbia University, who directed the construction of the machine.



## MEDICINE

## Hayfever Drug Aids Victims Of Parkinson's Disease

► **RELIEF** for victims of shaking palsy or Parkinson's disease from the hayfever drug, thephorin, was reported by Dr. F. M. Berger of the University of Rochester in the NEW YORK STATE JOURNAL OF MEDICINE.

Of 24 patients treated, 13 showed improvement within one to two days, he said. Patients who had previously been unable to turn over in bed due to muscular weakness found that they could do so a couple of days after receiving the drug. It also enabled patients to feed and clothe themselves.

One patient confined to his chair for two years was able to return to work after treatment with the drug.

Dr. Berger believes thephorin is the most effective drug found to date for this disease because it appears to be effective for all types of Parkinson's disease.

The drug was developed by Hoffman-LaRoche and the work was made possible by grants from the National Foundation for Infantile Paralysis and the Council on Pharmacy and Chemistry of the American Medical Association.

Science News Letter, August 20, 1949

## MEDICINE

## New Sedative Is Taken off Market

► **WITHDRAWAL** of a new sedative, Presidon, from the market followed reports of its possible ill effects, the Food and Drug Administration announced in Washington. The action was taken voluntarily by the manufacturer, Hoffman-LaRoche of Nutley, N. J.

George P. Larrick, associate Food and Drug Commissioner, said several reports indicating that the drug may be lowering the white blood count prompted the company to contact all doctors, hospitals, wholesalers, and retail druggists in the U. S. to stop using the drug.

The drug has been widely used in Europe for the last seven or eight years and is believed to have originated in Switzerland.

Science News Letter, August 20, 1949

## WILDLIFE

## Ewes Use Nursery School For Lambs, Not Mary's

► **A MOUNTAIN-TOP** nursery for little lambs—but not little Mary's—is being operated in a very human sort of way by the Mama Sheep (ewes to you) of Yellowstone's Mount Washburn.

This nursery for Rocky Mountain big-horn lambs, at an elevation of 10,317 feet, is organized in the same way as many neighborhood nurseries; the mothers take

turns "shepherding" the youngsters. This gives the ewes some time to themselves, just as it frees human mothers from the care of their youngsters for the morning or afternoon.

Discipline in the nursery is maintained by rebuking snorts or even a butt from the head of the ewe on duty for a particularly unruly lamb.

Pa Sheep, like human fathers, doesn't take much interest in this daytime baby-sitting. He's off on the peaks with the other rams. As a matter of fact, he doesn't take any interest in the ewes until fall, when he seeks their company.

Science News Letter, August 20, 1949

## MEDICINE

## Medical Science Scholar Awards To Be Granted

► **FIVE-YEAR** medical science scholar awards for young scientists interested in teaching or research in medicine will be granted to a third group of scholars by the John and Mary R. Markle Foundation in New York.

Each scholar will be a full-time faculty member at a medical school, and the school will receive a grant of \$25,000, payable at the rate of \$5,000 annually, for the scholar. A total of 29 scholars were named in 1948 and 1949, but the number to be appointed for next year has not been announced. Applications are to be made on or before Dec. 1 to the foundation.

Science News Letter, August 20, 1949

## ARCHAEOLOGY

## Ancient Burial Mounds In Japan To Be Excavated

► **BREAKDOWN** of the formal emperor-worship system in Japan releases for scientific investigation some of the biggest earthen burial mounds in the world. Until now, digging has been forbidden because they are regarded (possibly correctly) as the tombs of ancestors of the present reigning house in Japan, writes Edwin O. Reischauer to the American research journal, *ARCHAEOLOGY* (Summer).

Excavation of the great mound believed to be the burial-place of the Emperor Nintoku, who probably reigned about 400 A. D., is the first project planned. Approval of the present emperor is indicated by the report that his younger brother, Prince Takamatsu, is to be titular head of the undertaking.

No one knows as yet, of course, what will be revealed by the diggers' spades. However, since archaeological evidence is strong that the present Japanese culture was initiated early in the Christian era by an invasion of horse-riding warriors from Korea, discovery of Korean, or Korean-like, relics in the mounds would not be surprising.

Science News Letter, August 20, 1949

# IN SCIENCE

## MEDICINE

## Polio Isolation Period Of Only One Week Urged

► **POLIO** victims would be isolated for only one week after contracting the disease, or for the duration of their fever if it lasts longer, under recommendations made by the National Conference on Recommended Practices for the Control of Poliomyelitis announced in New York.

Twenty medical authorities who met last June in Ann Arbor, Mich., under the sponsorship of the National Foundation for Infantile Paralysis, developed the recommendations and called the present quarantine regulations unwarranted.

They stated that quarantine for polio is not of proven value.

The medical scientists pointed out in a guide prepared for local health officers that these regulations may create fear or hysteria during an epidemic and are wasteful as far as hospital facilities, personnel and family finances are concerned. They also cautioned that a long period of isolation creates barriers to giving the patient the treatment he needs in the early stages of the disease.

Schools were urged to open on schedule except in two situations: if children were transported to school from widely separated areas; and if, in addition to not reopening the schools, children were kept from coming in contact at such places as theaters, picnic and play grounds, beaches and Sunday schools.

Science News Letter, August 20, 1949

## ASTRONOMY

## Rocket Speeds Dwarfed By Newly-Discovered Nova

► **EXPLODING** at the velocity of 550,000 miles per hour, the "new" star, or nova, recently discovered in France, is still relatively bright and is being observed by most of the leading American observatories (See *SNL*, Aug. 13, p. 104).

The University of Michigan reports the 250-kilometers-per-second speed of the star's expanding shell, which makes earthly rocket speeds small in comparison. McDonald Observatory in Texas also reports to the Harvard Clearing center for astronomical messages in the U. S., a similar great shift in the absorption lines of the spectrum indicating the high velocity.

The new star is staying bright unusually long, as it is still reported as eighth magnitude. It is in the constellation of Scutum, the shield.

Science News Letter, August 20, 1949



# ENE FIELDS

## MEDICINE

### One Cold Wave Process Is Absolved of Ill-Effects

➤ A COLD wave home permanent has been absolved of causing ill effects to users by a team of physicians reporting in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (Aug. 13).

The home wave used in the new tests has the same ingredients as other cold wave processes but no generalization can be made since these other lotions may have different concentrations of the necessary chemicals.

The new evidence concerning its safety is based on patch tests made on 1,200 volunteers. They were a representative group of many varying conditions. Some had skin infections from other causes, some worked with the solutions in the factory, and some had had one to 20 previous cold waves.

In addition, to make the test absolutely fair, the beauty clinic operators were asked to let the scalps of the volunteers be thoroughly wetted by the waving lotion.

The results revealed that the cold wave preparation caused few skin irritations and very little sensitization. Previous criticism had also been based on its destructive action on liver cells. In this study no such harmful effect was found.

The work was done by Drs. Howard T. Behrman and Frank C. Combes of the New York University College of Medicine, Dr. Michael G. Mulinos of New York Medical College, Dr. Gustav Weissberg, Dr. Jerome Kaufman, Dr. Herbert Fishbein, and Willard F. Greenwald of New York, and Dr. Milton M. Hurwitz of St. Paul. The tests were conducted at Bellevue Hospital.

Science News Letter, August 20, 1949

## INVENTION

### Newly Patented Gadget Butters Corn-on-Cob

➤ A GOLF putter and a knife used for buttering corn-on-the-cob are alike in one respect; both are utterly unsuited for the purpose. Realization of this, as regards the knife at least, moved a Corn-Belt inventor, M. N. Mossel of Fulton, Mo., to do something about it. He came up with a special gadget that will apply the butter where it is wanted, without dropping it in pieces all over the plate, and on this he has just been granted U. S. patent 2,478,122.

The device is really quite simple. It is a square piece of metal or any other suitable material, arched underneath so that

it will ride on the corn ear, saddle-fashion. In the middle is a recess of the right size to take a pat of butter.

Turned upside down, it rests on four little legs until the butter is inserted. Then it is inverted over the corn, and the legs become a grip for the fingers of the user, as he slides it along over the ear, turning the latter until every grain is lusciously buttered.

It really ought to save a lot of time now wasted in attempts to butter corn with a knife—time that can henceforth be devoted to the serious business of eating corn.

Science News Letter, August 20, 1949

## AGRICULTURE

### Hybrid Seed Corn Grown Without Detasseling

➤ HYBRID seed corn can now be grown without the laborious, and often injurious, detasseling process. This has been made possible by the development of an inbred strain that produces no pollen. Detasseling, ordinarily practiced to prevent the corn plants intended to be the female parents of hybrid seed from pollinizing themselves, thereby becomes unnecessary.

The new pollenless strain was developed at the Connecticut Agricultural Experiment Station in New Haven, by Drs. Donald F. Jones and P. C. Mangelsdorf. Dr. Jones was the originator of the double-cross system now generally used in producing hybrid seed corn. Dr. Mangelsdorf is now a member of the Harvard University faculty.

The new production method is described in a new bulletin of the experiment station, written by Dr. Jones and Dr. Herbert L. Everett.

Science News Letter, August 20, 1949

## COMMUNICATIONS

### Airlines Require Large Network of Telegraph Wire

➤ AIRLINES as well as railroads require vast mileage of telephone wire for flight operations and other purposes, and what is claimed to be the largest communications network of any company in the world is now completed and in operation by United Air Lines, which centers operational activities in Denver.

Extending from this operational base, the company has almost 12,000 miles of private telephone lines and 20,000 miles of leased teletype wire, plus a vast array of plane-to-ground radio facilities.

Control of all cargo and passenger space is now centralized in Denver. Some 6,000 miles of telephone wire for payload control link 25 cities directly with the central office. Flight operations utilize about 4,000 miles of private wire, which also terminate there. A 1,900-mile administrative line connects executive offices in Chicago with the Denver center, and with the company's maintenance base in San Francisco.

Science News Letter, August 20, 1949

## BIOCHEMISTRY

### Cud-Chewing Animals Form Amino Acids from Urea

➤ AMINO acids, the chemical building blocks out of which proteins are formed, can be produced in the rumen, or first division of the compound stomach, of cud-chewing animals from the supposedly non-nutrient compound, urea. This has been demonstrated in experiments on sheep and goats at Cornell University, Ithaca, N. Y., by a five-man research team led by Prof. J. K. Loosli.

The animals were fed on a synthetic diet containing no proteins and only incidental traces of amino acids, with urea as the only nitrogenous compound present. Analyses of material taken from their rumens, as well as of their body wastes, showed the presence of ten different amino acids, in considerable quantities. The animals also gained weight steadily, indicating the synthesis of the amino acids into proteins, and these into living body materials.

Associated with Prof. Loosli in the work were Profs. H. H. Williams and L. A. Maynard and Drs. W. E. Thomas and Fent H. Ferris. Their report appears in the journal SCIENCE (Aug. 5).

Science News Letter, August 20, 1949

## BIOCHEMISTRY

### Growth-Control Substances Present in Seaweed

➤ SEaweeds produce growth-control substance, and respond to it in very much the same manner as the higher land plants. This has been demonstrated in two ways by Dr. Louis G. Williams of Furman University of Greenville, S. C., who carried on his experiments at the Woods Hole, Mass., Marine Biological Laboratory.

In one series of experiments, Dr. Williams cuts disks out of the broad-bladed seaweed known as Laminaria, and kept them in beakers of sea water containing various dilutions of the synthetic growth-control substance, indole acetic acid. They responded to the lower concentrations by growing healthily, but became unhealthy and disintegrated when there was too much of the compound. This agrees very well with what is known about growth-hormone effects on higher plants, which are stimulated by low dosages and injured or killed by overdoses, as in 2,4-D treatment of weeds.

In a second experimental series, Dr. Williams squeezed the juice out of Laminaria tissue, made it into a paste with lanolin, and applied the paste to the sides of oat seedlings. These responded by bending over, indicating increased growth rates where the Laminaria juice was at work on their cells.

Details of the experiments are reported in the journal, SCIENCE (Aug. 12).

Science News Letter, August 20, 1949

## PSYCHOLOGY

# Inner Secrets Revealed

Pictures can reveal to the psychologists the unconscious troubles in the minds of teen-agers such as dangerous aggressive drives, shyness, and sex conflicts.

By MARJORIE VAN DE WATER

► THE inner secrets of your personality can be told through pictures such as the two here. The pictures don't look like you, of course. But if you made up a story to fit the picture and told it to a psychologist, he would know a lot about your hidden feelings and drives, even if these are unknown to your own conscious mind.

The pictures and others like them are a series for a new test to learn more about the troubled, inner feelings of adolescents. With the help of the pictures psychologists might be able to pick up dangerously aggressive drives, shyness that can ruin a youngster's life if not detected, sex conflicts and many other important facts about our teen-agers.

Use of pictures for this purpose was devised by Dr. Percival M. Symonds of Teachers College, Columbia University.

If you want to get an idea of how the test works, try it on yourself.

Look at the picture below. What do you see in it? Perhaps it makes you think of the preparations in a family for high school graduation or some other special occasion. Or perhaps the mother is getting one of her daughters ready for her first dance. But what is the other girl thinking? Why is she not taking part in the preparations?

## Build Story

Now, show the picture to a teen-age boy (or girl) and ask him to build a story around it. You may be surprised at what he tells you. When high school boys and girls give free rein to their imaginations, they dream up a world filled with aggression, Dr. Symonds found.

Here is what one boy, Jimmy, a 17-year-old student of the academic course, told about the picture of the two girls and woman:

"There is a Cinderella situation here. One girl is the mother's favorite. The other one is neglected. They grow up like that, one disliking the other. One of them marries the handsomest fellow in town; the other one just gets a local boy, no one important. The marriage finally ends in a terrible tragedy. The favorite is killed by the neglected girl because of jealousy. Naturally, the husband of the favorite seeks revenge, and he goes to the house where the other girl lives and makes an attempt to murder her. He is killed by this girl's husband, and the other two are accused of murder. They're executed. The mother realizes that her favoritism caused sorrow to about 12 different people, the families of the dead."

But don't picture Jimmy, on the basis of this story of his, as a teen-age gangster, whose literary fare consists solely of the more lurid comics. He is a well-adjusted boy with an excellent reputation in school with his teachers. He is fond of reading poetry and plays and likes to see plays. He collects books and would like to own complete sets of the poets and classics. Chief worry of his parents about him is that his popularity keeps him from spending enough time on his school work. He speaks warmly of his father and mother and calls them pals.

## Reveal Character

The stories thought up by the boys and girls do reveal their character—not a single one like this but a series of them—but they show the deep-seated tendencies, not the surface appearance. In general, when a theme is exaggerated in the stories there is an absence of this trend in the personality of the individual, and vice versa, Dr. Symonds found.

Individuals with stories filled with violence and hostile aggression turned out to be in real life sissies, ingratiating, inhibited and docile. Those who tell bizarre, fantastic stories containing elements of mystery turn out to be quiet, lazy, indifferent and

without initiative or queer, nervous and immature.

Perhaps you would like to see what a neurotic boy with delinquent trends does with the same picture. This is the story thought up by Jack, 15-year-old junior high student:

"This woman had two girls. One was younger than her sister. Her mother always liked the oldest girl. So she bought her all new clothes and gave her the best of everything. She gave the younger girl the old clothes which her sister had worn out. The mother always made her do housework while her sister went out with boys. The mother always thought that the oldest girl would marry a rich guy and she'd live with her in luxury. But she got fooled, for when this girl married, she didn't care nothing about her mother. She and her husband moved. The mother didn't know where for she never heard from her. The youngest girl was just going with boys. She stayed with her mother and helped her all she could. When she got married, she done the opposite of the other girl and took the mother into her home. The mother was always sorry she never favored the little girl."

Both boys start out with the same situation of sister rivalry, but how different is the ending!

Now look at the picture on the opposite page. What does it make you think of? You will undoubtedly notice the clenched fist and set jaw and think that the young man is angry and perhaps is leaving home.

Here is what Jimmy saw:







"This man works for a rich farmer. He has been working for him for years. He has been underpaid, beaten, treated mean, but for some reason he never has left the place. The reason is that when he was a little boy he was first brought to this place by his father. He has grown up with the present farmer, his boss now, and the present farmer's sister. As he grew up he grew to love the farmer's sister, and the farmer hates him because of all the attention given him. He is strong and handsome. The farmer hates him because he himself is frail and jealous of the other man's strength. He lived under these cruel conditions, beaten, all because of his love for the sister. Finally the farmer, who had great influence over his sister, was forcing her to marry some man to get his money. This was the day of the wedding. He had just heard that the farmer's sister was found dead in her room. She had killed herself to avoid marriage. The man realized that now he had no reason to stay and that at last he could have revenge without hurting the one he loved. He went into the house and killed the farmer he had grown up with—choked him to death with the powerful muscles of his hands—muscles that the farmer had forced him to build. He did not try to escape from the police after they found that he had murdered the farmer. He confessed to the crime and was hung on a tree right in front of the great house he should have owned. He was buried alongside of the farmer. The farmer's grave separated him and the girl's. They were separated in death even as in life."

When asked where he got the idea for the story, Jimmy said "The beginning is taken almost directly from 'Wuthering Heights.' The end is more my own—more tragic."

Jack also sees a crime story in this picture, but his version, inspired in part by movies and books, is much less violent than Jimmy's and again has a happy ending:

"This boy was brought up in a bad neighborhood. He was adopted by some rich people. While living there, he was influenced by a gang to tell them where the safe was and the combination, for the people trusted him with the combination. The gangsters got caught and squealed on the kid. He was sent to the reformatory. The people wanted to give him another chance, because they liked him. They thought it wasn't his fault. After two years in the reform school he was given a pardon. He got out and now he's working, hoping he can make a new start. He turned out to be a good citizen."

In the stories of these high school boys and girls, aggression is followed by punishment in monotonous sequence, Dr. Symonds found. A sequence repeated over and over again was to have the aggression of robbery or personal attack followed by the arrival of police, arrest, conviction and punishment. Punishment meted out by these high school authors is severe—often life imprisonment or the electric chair.

### Aggression Themes

Stories were obtained from 20 boys and 20 girls on 42 pictures. Every boy and girl told at least three stories including themes of aggression. But love was a common theme, too. Altogether 17 boys and 19 girls included at least three themes of love in their stories.

Dr. Symonds warns against using stories such as these to divine anything about the life history of the boy or girl telling them. The story teller does put himself into the tale, but caution must be used in interpretation. The boy or girl author may appear in the role of any, or all the characters of his creation. And it is not the least difficult for him to identify himself with a character of the opposite sex or a different age level. In fact, stories contain various displacements and disguises to hide the identity of the actual persons toward whom the feelings expressed in the story are directed in real life.

The psychologist can learn much about personality from the study of such stories, Dr. Symonds concludes, but he must proceed by indirection and must learn all he can about the individual before attempting to interpret his phantasies.

The complete set of the pictures drawn for the purpose by the artist Lynd Ward, together with the results of Dr. Symonds' study of the imaginings of high school boys and girls, are contained in a new book just published, *ADOLESCENT FANTASY* (Columbia University Press).

Science News Letter, August 20, 1949

### BOTANY-CHEMISTRY

## Heavy Doses Of 2,4-D Kill Water Hyacinth

► **WATER** hyacinth, at once the most troublesome and the most beautiful of the South's aquatic weeds, can be effectively controlled with heavy treatments of the

weed-killing chemical, 2,4-D, where lighter treatments have failed in the past. It promises to rid Southern rivers and lakes of blocking mats of vegetation that do tens of millions of dollars' worth of damage every year.

A team composed of scientists from Tulane University, the Boyce Thompson Institute for Plant Research and the Army Engineer Corps have been conducting experiments under controlled field conditions. They have found that a spray laying down the equivalent of eight pounds of 2,4-D per acre will kill the water hyacinth and cause the masses to sink. It is important that this sinking occur; floating masses of dead hyacinth would be almost as bad as the living mats, so far as channel obstruction is concerned.

Water hyacinth is a tropical plant brought to this country originally as an ornamental. It has spikes of beautiful lavender flowers, and floats by means of air-containing pithy swellings in its leaf-stems, while its long roots trail in the water. Besides blocking navigation on rivers and lakes, it ruins them as habitats for ducks and fish, and also offers favorable breeding spots for some species of mosquitoes.

Science News Letter, August 20, 1949

## Words in Science— ANTI-HISTAMINE

► **HISTAMINE**—you say it his-tam-in, stressing the his—is a chemical normally formed in the body. Among other actions, it stimulates stomach secretion.

It is now believed that release of too much histamine in the body can play a part in allergies and can also bring on vomiting and diarrhea.

So the drugs now commonly used against hay fever, asthma, hives and other allergies are anti-histamine chemicals; they counteract the histamine in the body.

Among the anti-histamine chemicals are benadryl, thephorin, trimeton, and therylene hydrochloride.

Science News Letter, August 20, 1949

**I**f you are interested in acquiring distinguished but inexpensive books for your science library, you will want a copy of Harvey Brace Lemon's *FROM GALILEO TO COSMIC RAYS* for only 98c. This 450-page work was published at three dollars and provides an intelligent, lucid account of the evolution of physics through Galileo, Newton, Boyle, Dalton, Einstein, et al. Gerald Wendt in the N. Y. Herald Tribune says, "In all the years that I have been reviewing scientific books I have often been fascinated but I have seldom used exclamation points. But this book deserves a fanfare . . ." Two other noted books now offered by us at drastically reduced prices: Warren Weaver's *THE SCIENTISTS SPEAK* at 98c (regularly \$3.75) and Raymond Ditmars' *THRILLS OF A NATURALIST'S QUEST* at 98c (originally \$3.50). Add 7c postage per book ordered. Ten-day cash-back guarantee. Send for FREE CATALOG listing many other outstanding titles in SCIENCE, PHYSICS, NATURE and APPLIED MATHEMATICS. Savings up to 75%.

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## ENGINEERING

# Deeper Oil Well Drilling

► NEW developments in drilling 20,000-foot wells in the search for oil were discussed at the Lake Success, N. Y., meeting of the United Nations Scientific Conference on the Conservation and Utilization of Resources (UNSCCURE), being held this month, by I. S. Salnikov of the Standard Oil Company.

A 1,500-foot well was regarded as deep a half century or so ago, and drilling to that depth was a relatively easy job. America's first oil well, bored at Titusville, Pa., soon after the discovery of oil in 1859, was 69.5 feet in depth. Only 20 years ago, a 9,000-foot well was considered an epic achievement. The first 15,000-foot well was drilled in 1938. Since World War II, four wells in succession have set new records below that depth, and a well in Wyoming, not yet completed, is now below the 20,000-foot mark.

The first oil-well-drilling equipment was the cable tool rig which, in one form or another, has been used to punch holes in the ground since the beginning of recorded history, he stated. The standard cable tool method was used in the United States

almost exclusively until 1900. A year later the rotary drilling method came into general use in this country. But although steady improvements were made, pre-war equipment is not satisfactory to obtain the great depths of these post-war deep wells.

The most important developments in rotary drilling, Mr. Salnikov told the scientists, are in the unitization and portability of drilling rigs and equipment; better quality steel for drilling equipment; improved designs; improvement in drilling

muds; better understanding of hydraulics in mud systems; and proper application of weight on the bit and rotating speeds. Unitization and portability have made drilling more economical but have not added much to the depth problem.

War-developed steels of great strength are now in use in well drilling. Lightweight, high-speed diesel units now provide power. Hydraulic drives, in the form of hydraulic couplings and torque converters; radially operated air clutches for use in frequently engaged and disengaged rig drives; air controls of engine throttles, and other services have also been developed by the oil industry in recent years.

Science News Letter, August 20, 1949

## AERONAUTICS

# Design Slow-Speed Plane

► SLOWNESS, not speed, is the feature of a new airplane produced by a professor of Massachusetts Institute of Technology and a professor of Harvard which has already demonstrated its ability to land and take off from an area no larger than a tennis court, it was revealed.

A new name has been coined for the craft. It is the Heliplane, because its take-off and landing characteristics approach that of the helicopter. However, it is a high-wing monoplane and in appearance is similar to that of other two-passenger private craft. The model now in use, which made its first flight three months ago, was built by the Helio Corporation of Norwood, Mass., with funds and under the supervision of the two college instructors.

The plane was designed by Otto C. Koppen, a pilot now a professor of aeronautical engineering at M. I. T., to specifications laid out by Dr. Lynn Bollinger, of Harvard, a former pilot and airport operator. Its first flight was made with Prof. Koppen at the controls. The inventors plan to license the design for commercial manufacture after a small number have been built and they are certain that the plane has been perfected.

The new plane can fly at a minimum speed of 27 miles an hour, the inventors claim. It can do this with no risk of stalling or spinning, they say. Yet its high-speed and load-carrying characteristics are comparable with those of an efficient modern plane of the same size. It is designed to clear a five-story structure only 100 yards from its starting point.

The Heliplane is fully equipped with starter, generator, radio, and the crosswind landing gear, sponsored by the U.S. Civil Aeronautics Administration, that makes landing on a fixed runway possible regardless of the direction of the wind. It has an unusually large two-bladed Aeromatic constant-speed high-lift propeller, and is equipped with an 85-horsepower

Continental engine.

Another feature of the new plane, an important asset if tiny airstrips in the heart of a built-up area are to be used, is its quietness. It makes but little more noise than an automobile. Profiting by experimental work of the National Advisory Committee for Aeronautics, the Heliplane uses different mechanical methods for restricting propeller noise, and the engine racket is eliminated by a "hush-box" which Prof. Koppen developed and patented several years ago.

Science News Letter, August 20, 1949

## ZOOLOGY

# Oysters Not so Dumb; Choosy About Food

► OYSTERS aren't as dumb as the proverb would have us believe. They know what they like.

Contrary to a widely-advocated view that oysters will swallow any microscopic particle if it is in the size range of their accustomed food plants, Dr. Victor L. Loosanoff of the U. S. Fish and Wildlife Service laboratory in Milford, Conn., has found that the tasty mollusks are a bit choosy about what they will eat.

He tried suspensions of yeast cells on some batches of experimental oysters. There is nothing unwholesome about yeast, but the oysters weren't used to it, so they wadded up the cells and spewed them out again.

Oysters exercised this selectivity on mixed lots of foodplant cells containing also quantities of purple bacteria which they didn't like. Here again they wadded up the purple cells and rejected them, but swallowed and digested the plant cells that make good oyster rations.

Dr. Loosanoff tells of his observations in the journal, SCIENCE (July 29).

Science News Letter, August 20, 1949

## LINGUAPHONE



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## ENGINEERING

# Coke-Briquette Process

➤ NORWAY will be able to meet its own needs for coke and liquid motor fuels by a new electrical method developed in that country for the production of high-quality coke briquettes from non-coking coal and also gases that can be converted into gasoline and diesel oil.

The new process, now under development, was discussed at the meeting of the United Nations Scientific Conference on the Conservation and Utilization of Resources (UNSCCURE) at Lake Success, N. Y., by Olaf Jensen of Oslo, Norway.

Norway already has a rather plentiful supply of hydroelectrical energy and much more can be developed as needed. The coal to be used is from the islands of Spitsbergen (Svalbard) far to the north in the Arctic Ocean, where an estimated amount of 8,000,000,000 tons are available. The Spitsbergen coal is unsuitable for coke-making in the usual type of coke ovens.

In the new process, the coal is crushed and then briquetted. In one method the crushing is carried to pulverization and the briquettes formed by high pressure

without use of a binder. In a second method, the coal is not so finely crushed and formed into briquettes at relatively low pressure with concentrated sulfite waste liquor as a binder. The choice of process will depend upon economic factors, such as the availability and cost of the sulfite waste.

The coal briquettes are then pre-heated to 150 to 200 degrees Centigrade. It is a well known fact, Mr. Jensen said, that by a sufficiently slow rate of heating, coal briquettes can be made into high-temperature coke without cracking, deformation or fusing together. The resulting coke-briquettes have high mechanical strength, a dense structure and are far more re-active than standard high temperature coke.

By-products of the process are coal tar and gas. The gas is entirely suitable for conversion into gasoline and diesel fuel by processes well known in America. Some 1,500,000 tons of coal will yield approximately 700,000 tons of coke, 750,000 barrels of tar, and 2,000,000 barrels of gasoline and fuel oil, he stated.

Science News Letter, August 20, 1949

## FORESTRY

# Importance of Forestry

➤ THE importance of forestry on the present and future world was emphasized at the meeting of the United Nations Scientific Conference on the Conservation and Utilization of Resources (UNSCCURE) this month at Lake Success, N. Y., by several scientists from various parts of the world. Papers ranged from the necessity of reforestation to proper forest management.

Naturalists are convinced of the beneficial effects of forests on the meteorological and hydrological conditions, and the large part that properly distributed and well maintained forests play in the well-being of rural and agricultural communities, the UNSCCURE was told by C. R. Ranganathan of the Indian Forest Service, it was revealed.

Historical evidence from many countries proves conclusively, he stated, that the soil and physical conditions deteriorate with the destruction of forests or their degradation through excessive grazing or burning. Forests are important basic agents. The development of the soil and the natural vegetation it supports are co-ordinate and interdependent. The moderating influence of forests on the temperature is distinctly noticeable. Trees act as pumps, tapping the ground water from considerable depths and transferring it to the air. Forests affect the ground water-table according to the initial nature of the soil and the topography. In dry soils and on slopes they increase water-

holding capacity, but in ground liable to marshy conditions, the trees tend to lower the water table and exercise a draining effect.

The danger of a shortage of wood which alarmed Western and Central Europe at the close of the Middle Ages was largely responsible for the forestry practices developed in the 18th century which are based upon conservation, the meeting was told by Stefan Duschek of Linz, Austria. The principles developed in the best European forestry practices are now needed throughout the world.

The function of conservation is to obtain wood in such quantities and by such means that future generations are insured a constant supply and one as stable and plentiful as possible, according to Mr. Duschek. It is extremely important for young countries to allocate their forest areas appropriately among the different types of land utilization, and to graduate their cultivation systems according to the plan.

Science News Letter, August 20, 1949

## ASTRONOMY

# Fast-Moving Sky Object Will Be Back in 1951

➤ THE fast-moving sky object discovered at the University of California's Lick Observatory late in July is moving out of the

range of astronomers' telescopes, but it will be back for more 'scope photos in the spring of 1951.

The object was first spotted at the California observatory on the night of July 25, by Dr. C. A. Wirtanen by studying photographic plates. Believed to be an asteroid, or minor planet, the object was far too faint to be seen by the naked eye.

Dr. Alan D. Maxwell of Howard University has calculated the orbit, or path of the object around the sun, and finds that it probably takes about 20 months to make a complete trip. From this, he estimates that earth-bound astronomers ought to be able to photograph the faint object for a short period every two and one-half years, or next time in March or April of 1951.

"Remarkable thing is that it has not been found before," comments Dr. Maxwell.

Object Wirtanen, as the new find is called, comes to about 28,000,000 miles from the earth at its closest approach, where it was about Aug. 1. Closest approach it makes to sun is about 120,000,000 miles, the new calculations indicate.

Orbit of object Wirtanen falls between the paths of the earth and Mars around the sun.

Science News Letter, August 20, 1949



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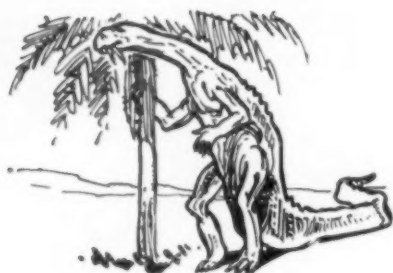
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PALEONTOLOGY

# NATURE RAMBLINGS

by Frank Thone



**Thermothanatos**

➤ DINOSAURS died off leaving no heirs of their line to dispute with the upstart mammals their once-held dominion of the earth, not because the climate became too cold but because it got too hot for them. The heat may have killed some of them directly, but more likely it wrought their extinction indirectly, through making the males incapable of reproduction.

This thesis, radically contradictory to the older doctrine that the great reptiles were simply frozen out by some long-gone ice age, is advanced by Prof. Raymond R. Cowles of the University of California at Los Angeles. He has devoted a good deal of research to the phenomena of heat-responses in modern cold-blooded animals, especially reptiles, and he reasons by analogy with what he has actually observed under field conditions.

Years ago, Prof. Cowles came to question the time-worn simile, "happy as a lizard on a hot rock," because the lizards he had seen on hot rocks were distinctly not happy. To begin with, lizards (or snakes) are rarely seen on rocks that are really hot. Few reptiles are to be seen in the full glare of the noonday sun in the desert. They are down in their burrows, or hiding in shady spots. The time for them to be abroad is in the forenoon and late afternoon, when the sand and rocks are merely pleasantly warm.

The California zoologist went beyond simple field observations. He penned reptiles of various kinds on areas of rock and sand and kept them there as daytime temperatures rose to their simmering maxima. The poor creatures showed signs of increasing

distress, ending in prostration. If he did not let them escape in time, they died.

The point is, that these so-called cold-blooded animals become more hot-blooded than warm-blooded animals when they are exposed to too much heat. They do not have the thermo-regulatory mechanisms possessed by the later-arriving, more highly evolved mammals and birds. If the hot rock changes from a nice, warm basking-place to a 120-degree griddle, they die of what amounts to an extreme fever.

Even without waiting for that, however, a male reptile, with its sex glands carried within its over-heated body, can suffer heat-sterilization if caught by a too-high temperature. Crocodilians and sea-turtles keep safely cool in the water; terrestrial snakes and lizards are small enough to find saving shelter. But the huge, lumbering saurians of the late Cretaceous, kept constantly just a little too warm by an endless August of world-wide tropical conditions, may very well have become incapable of fertilizing their mates' eggs. So, like many another ponderous aristocracy, they may well have lost their world simply through lack of offspring.

Science News Letter, August 20, 1949

## GEOLOGY

# Reporting Tidal Waves

➤ SAFETY in the Pacific area will be promoted by Pacific and Alaskan stations maintained by the U. S. Civil Aeronautics Administration which have now been made a part of a system for detecting and reporting tidal waves resulting from undersea earthquakes. The CAA contribution will be largely the use of its continuous communications channels in the area.

In this work, the CAA is now cooperating with the U. S. Coast and Geodetic Survey and the Military services in a far-flung program of observation and reporting. Shores in the path of such waves will be warned so that steps can be taken to prevent loss of life and property.

These tidal waves are more properly called seismic waves. They are relatively low in height and of great length, and are not easily detected by aircraft and ships at sea or by normal eyesight observation. They may attain speeds of more than 400 miles per hour and cause terrific damage when they roll up unexpectedly on islands or the shoreline of mainlands. The Honolulu disaster a few years ago is an example of their power to destroy.

Special instruments employed by strategically located tide gauge stations are designed to screen the normal rise and fall of sea water and detect a sustained rise which may be a sea wave. The Honolulu magnetic and seismological observatory is the focal point of the detecting and warning system. When earthquake disturbances are noted at west coast observatories, re-

ports are made to Honolulu. Tide gauge stations in the Alaska area and on islands throughout the Pacific are alerted to make continuous observations. Once a sea wave is detected, all areas are warned to prepare for possible consequences.

Science News Letter, August 20, 1949

## ZOOLOGY

# Mouse-Eating Frogs Added To National Museum

➤ MOUSE-eating frogs, that bellow fiercely like bulls when disturbed, have been added to the zoological collections at the U. S. National Museum in Washington. They come from the rainy mountains of tropical Brazil. Their mouths are so wide that it is no trick at all for them to swallow mice. They also gulp down other frogs.

They might be described as Mr. (and Mrs.) Six-by-Six; both sexes are about the same size, six inches long in the body and almost as wide. They won't budge even for relatively gigantic visitants like human beings, but merely swell up balloon-wise and sound off with their startling bellowing.

Their daunting appearance is enhanced by the possession of what seem to be horns. However, states Dr. Doris Cochran of the Museum staff, these apparent horns are merely outgrowths of the skin, and have no combat value whatever.

Science News Letter, August 20, 1949

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# Books of the Week

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**AMERICAN PERMIAN NAUTILIDS**—A. K. Miller and Walter Youngquist—*Geological Society of America*, 218 p., illus., \$3.60. Although much has been written on ammonoids of the Permian, this is one of the first monographs on the nautiloids. Helpful to geologists and paleontologists.

**CHANGE OF LIFE**—F. S. Edsall—*Woman's Press*, 127 p., illus., \$2.00. A woman physician and mother writes this little volume in which the average woman will find much useful information on the problems that the menopause brings and how to solve them.

**CONTROLLING FACTORS IN ECONOMIC DEVELOPMENT**—Harold G. Moulton—*The Brookings Institution*, 397 p., \$4.00. Fundamentals underlying economic advancement.

**FACTORS OF EVOLUTION: The Theory of Stabilizing Selection**—I. I. Schmalhausen—*Blakiston*, 327 p., illus., \$6.00. An analysis of the evolutionary relations in terms of genetic causation. The author, an elected member of the USSR Academy of Science, is reported to be expelled for not following Lysenko's interpretation of genetics. Translated from the Russian by Isadore Dordick.

**THE FIRST BOOK OF BUGS**—Margaret Williamson—*Watts*, 44 p., illus., \$1.50. Here is a book full of creatures, of which some are already familiar to any boy or girl, others he has yet to meet—crickets, moths, spiders, ants, daddy-long-legs and many others.

**THE INSECT WORLD OF J. HENRI FABRE**—Edwin Way Teale, Ed.—*Dodd*, 332 p., illus., \$3.50. The best of Fabre's writings are brought together into one compact volume. The record of the Pine Processionary caterpillars, which has been up to now out-of-print, is included.

**THE PLANT IN MY WINDOW**—Ross Parmenter—*Crowell*, 148 p., illus., \$2.50. A story of a city dweller who adopted a plant left behind by a former tenant. Besides telling of the growth of the plant, it also tells of the intellectual growth of the tenant.

**REVISION OF THE FAMILIES AND GENERA OF THE DEVONIAN TETRACORALS**—Edwin C. Stumm—*Geological Society of America*, 92

p., illus., \$2.00. A detailed study of the families, sub-families, and genera.

**SEDIMENTARY FACIES IN GEOLOGIC HISTORY**—Chester R. Longwell, Chairman—*Geological Society of America*, 171 p., illus., \$1.75. Conference at the meeting of the Geological Society held in New York, November 11, 1948. In this book the focus of the principal papers is on the geologic record, but interpretation is sought through allied disciplines and techniques.

**THE SINGLE WOMAN**—Robert Latou Dickinson and Lura Beam—*Williams & Wilkins*, 469 p., \$4.00. A reprint of a medical analysis of a single woman's problems. The basic material for the book consists of 1078 cases gathered over a period of 40 years.

**SUBSURFACE GEOLOGIC METHODS**—L. W. LeRoy and Harry M. Crain, Eds.—*Colorado School of Mines*, 826 p., illus., paper, \$6.00. Volume 44, number 3 of the *Quarterly*, is a compilation of all the various subsurface geologic methods known at the present time.

**THE TERPENES, Vol. II**—Sir John Simonsen—*Cambridge University Press*, 2nd ed., 219 p., illus., \$8.50. This volume includes material up through 1947 and a few references to 1948 literature on dicyclic terpenes. For the professional man.

**TELEVISION WORKS LIKE THIS**—Jeanne and Robert Bendick—*Whittlesey House*, 62 p., illus., \$1.75. Presents the behind-the-scenes story of the medium of communication. Factual material in simple drawings.

**A THOUSAND MARRIAGES**—Robert Latou Dickinson and Lura Beam—*Williams and Wilkins*, 482 p., \$4.00. A reprint of a well-known book published in 1931 and for some time out of print, this study is sociological and psychological as well as medical. Based on case histories of more than one thousand patients.

Science News Letter, August 20, 1949

## MINERALOGY

### South Dakota Manganese Deposits Are Low-Grade

► UNTOUCHED deposits of metallic manganese in South Dakota could serve the nation in an emergency, but are low-grade in quality and can not be up-graded economically to meet industrial requirements, the U. S. Bureau of Mines recently reported.

The Bureau's conclusion is based on pilot-plant tests. The South Dakota deposits, estimated at more than 12,000,000 tons, are on both flanks of the Missouri river in an area included in the Missouri River Basin Development Plan. The figure is a result of surveys made by Bureau technicians during 1945-47 in which 238 holes were drilled.

America, today, produces very little of this metal essential in steel making, the production of dry electric cells, the manu-

facture of manganese sulfate for fertilizer and for other uses in the chemical field. Over 1,500,000 tons are imported normally each year. Domestic manganese ore, mined principally in Montana, amounts to about 135,000 tons. Manganiferous iron ore, and similar ores, are also mined.

Russia produces approximately one-half the total amount of manganese ore mined in the world. America was Russia's best customer for many years. The supply used in the United States in postwar years comes largely from Cuba, Brazil, India, the African Gold Coast and the Union of South Africa, with smaller quantities from Mexico, Chile and from the Soviet Union. Cuba's known reserves, due to wartime exploitation, are facing exhaustion. America's best bet today appears to be the newly discovered deposits in Brazil north of the Amazon river.

Present manganese mining in Brazil is in two well-known areas but both are far removed from United States ports. One is near the Paraguay border, and the other near Rio de Janeiro. The distance from New York to the area of the newly discovered deposits is only about half as great. They are in the territory of Amapa, between the Amazon and the Guianas.

Science News Letter, August 20, 1949

A fluorine compound with acetic acid is one of the most deadly poisons known, while fluorine with carbon, as in the freons used in refrigeration, is harmless.

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❁ **SALT SHAKER**, with an electrical heating element in an air chamber in its base, gives promise of relief from the summer problem of delivering salt to the food at the dining table. This recently patented device is merely plugged into an ordinary electric outlet for a while when the salt gets sticky.

Science News Letter, August 20, 1949

❁ **HEADREST**, for persons who like to read while in the bathtub, is made of aluminum and has on its upper surface a covering of cushiony sponge rubber. An arm behind the curved piece of aluminum has a base by which the device can be attached to the tub in the best position for the reader.

Science News Letter, August 20, 1949

❁ **TRACTION DEVICE** for motor vehicles, recently patented, is attached to the outside of the wheel and has elongated grouters, or spikes, that project when wanted beyond the tire. These grouters are pivoted and can be turned along the tire when not needed for traction; they are adjustable in projection length.

Science News Letter, August 20, 1949



❁ **SPRAYING DEVICE**, shown in the picture, is for hayfever victims, to give quick relief by a local application of Pyribenzamine. Pressure on the flexible non-corrosive plastic tube produces a fine spray. The drug is available only on a physician's prescription.

Science News Letter, August 20, 1949

❁ **CARRYING HANDLE** for a bowling ball is made of a flexible material and holds the ball by means of a suction cup. An air passage within this recently patented device has a port or opening to the upper part of the handle which can be closed by the bowler when the cup is pressed into gripping engagement with the ball.

Science News Letter, August 20, 1949

❁ **ODOR ABSORBER** for the refrigerator utilizes activated carbon as a filter to remove gases and odorous vapors, and a small motor-operated blower to draw the air through the filter and recirculate it. Plugged into an electric outlet within the refrigerator, no service is needed except to reactivate the carbon occasionally.

Science News Letter, August 20, 1949

❁ **EDUCATIONAL TOY** for youngsters consists of a set of plastic cut-out designs which will adhere by finger-pressure to a glass, enamel or porcelain table top, or to a special board provided with the set. The cut-out designs, vari-colored, are circular, triangular, rectangular and other shapes, and can be arranged to form a house, doll or other object.

Science News Letter, August 20, 1949

## Do You Know?

The trumpeter swan is the heaviest flying bird in America.

A cord of good hardwood, well seasoned, can produce as much heat as a ton of coal or 200 gallons of fuel oil.

Calcite, a metamorphic limestone, mixed with cement, appears to give a concrete with unusual water- and acid-resistant properties, Norwegian scientists have discovered.

The saddle-horse population of the United States is estimated at about 850,000, more than half of which are work animals on western ranges.

Among the several types of radio broadcast services in the United States are the "Standard" or AM (amplitude modulation), the improved static-free FM (frequency modulation), TV or television, non-commercial educational, facsimile, and international.

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